

ENTERED



PCT

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/646,569A

DATE: 03/27/2003  
TIME: 13:16:44

Input Set : N:\Crf4\03272003\I646569.raw  
Output Set: N:\CRF4\03272003\I646569A.raw

1 <110> APPLICANT: The Trustees of Columbia University in the City of New York  
 2 <120> TITLE OF INVENTION: Novel Tumor-Associae Marker  
 3 <130> FILE REFERENCE: 0575/60240-PCT  
 4 <140> CURRENT APPLICATION NUMBER: US/09/646,569A  
 5 <141> CURRENT FILING DATE: 2001-09-18  
 6 <160> NUMBER OF SEQ ID NOS: 28  
 7 <170> SOFTWARE: PatentIn version 3.1  
 9 <210> SEQ ID NO: 1  
 10 <211> LENGTH: 333  
 11 <212> TYPE: PRT  
 12 <213> ORGANISM: Human  
 13 <400> SEQUENCE: 1  
 14 Met Pro Leu Gly Leu Gly Arg Arg Lys Lys Ala Pro Pro Leu Val Glu  
 15 1 5 10 15  
 16 Asn Glu Glu Ala Glu Pro Gly Arg Gly Gly Leu Gly Val Gly Glu Pro  
 17 20 25 30  
 18 Gly Pro Leu Gly Gly Gly Ser Gly Gly Pro Gln Met Gly Leu Pro  
 19 35 40 45  
 20 Pro Pro Pro Ala Leu Arg Pro Arg Leu Val Phe His Thr Gln Leu  
 21 50 55 60  
 22 Ala His Gly Ser Pro Thr Gly Arg Ile Glu Gly Phe Thr Asn Val Lys  
 23 65 70 75 80  
 24 Glu Leu Tyr Gly Lys Ile Ala Glu Ala Phe Arg Leu Pro Thr Ala Glu  
 25 85 90 95  
 26 Val Met Phe Cys Thr Leu Asn Thr His Lys Val Asp Met Asp Lys Leu  
 27 100 105 110  
 28 Leu Gly Gly Gln Ile Gly Leu Glu Asp Phe Ile Phe Ala His Val Lys  
 29 115 120 125  
 30 Gly Gln Arg Lys Glu Val Glu Val Phe Lys Ser Glu Asp Ala Leu Gly  
 31 130 135 140  
 32 Leu Thr Ile Thr Asp Asn Gly Ala Gly Tyr Ala Phe Ile Lys Arg Ile  
 33 145 150 155 160  
 34 Lys Glu Gly Ser Val Ile Asp His Ile His Leu Ile Ser Val Gly Asp  
 35 165 170 175  
 36 Met Ile Glu Ala Ile Asn Gly Gln Ser Leu Leu Gly Cys Arg His Tyr  
 37 180 185 190  
 38 Glu Val Ala Arg Leu Leu Lys Glu Leu Pro Arg Gly Arg Thr Phe Thr  
 39 195 200 205  
 40 Leu Lys Leu Thr Glu Pro Arg Lys Ala Phe Asp Met Ile Ser Gln Arg  
 41 210 215 220  
 42 Ser Ala Gly Gly Arg Pro Gly Ser Gly Pro Gln Leu Gly Thr Gly Arg  
 43 225 230 235 240  
 44 Gly Thr Leu Arg Leu Arg Ser Arg Gly Pro Ala Thr Val Glu Asp Leu

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/646,569A

DATE: 03/27/2003

TIME: 13:16:44

Input Set : N:\Crf4\03272003\I646569.raw

Output Set: N:\CRF4\03272003\I646569A.raw

|    |   |     |     |
|----|---|-----|-----|
| 45 | 245   | 250 | 255 |
| 46 | Pro Ser Ala Phe Glu Glu Lys Ala Ile Glu Lys Val Asp Asp Leu Leu     |     |     |
| 47 | 260   | 265 | 270 |
| 48 | Glu Ser Tyr Met Gly Ile Arg Asp Thr Glu Leu Ala Ala Thr Met Val     |     |     |
| 49 | 275   | 280 | 285 |
| 50 | Glu Leu Gly Lys Asp Lys Arg Asn Pro Asp Glu Leu Ala Glu Ala Leu     |     |     |
| 51 | 290   | 295 | 300 |
| 52 | Asp Glu Arg Leu Gly Asp Phe Ala Phe Pro Asp Glu Phe Val Phe Asp     |     |     |
| 53 | 305   | 310 | 315 |
| 54 | Val Trp Gly Ala Ile Gly Asp Ala Lys Val Gly Arg Tyr                 |     |     |
| 55 | 325   | 330 |     |
| 57 | <210> SEQ ID NO: 2  |     |     |
| 58 | <211> LENGTH: 720   |     |     |
| 59 | <212> TYPE: DNA   |     |     |
| 60 | <213> ORGANISM: Human   |     |     |
| 61 | <400> SEQUENCE: 2   |     |     |
| 62 | cacggggagg cggaggcagc ggccggcgccg gcggcgccgg cggccggccgc ggagcagatc | 60  |     |
| 63 | ttctgggtac cccacttctc gctgctcatg ccgctggac tggggcgccg gaaaaaggcg    | 120 |     |
| 64 | ccccctctag tggaaaatga ggaggctgag ccaggccgtg gagggtggg cgtggggag     | 180 |     |
| 65 | ccagggcctt tgggcggagg tgggtcgggg ggccccaaa tgggcttgcc ccccccccc     | 240 |     |
| 66 | ccagccctgc ggccccccct tgttccac acccagctgg cccatggcag tcccaactggc    | 300 |     |
| 67 | cgcacgcagg gttcaccaa cgtcaaggag ctgtatggca agattgccga ggccttccgc    | 360 |     |
| 68 | ctgccaactg ccgagggtat gtttgcacc ctgaacaccc acaaagtggc catggacaag    | 420 |     |
| 69 | ctcctggggg gccaaatcg gctggaggac ttcatcttcg cccacgtgaa ggggcagcgc    | 480 |     |
| 70 | aaggagggtgg aggtttcaaa tggaggat gcaactcgcc tcaccatcac ggacaacggg    | 540 |     |
| 71 | gctggctacg cttcatcaa ggcacatcaag gagggtggc tgatcgacca catccacctc    | 600 |     |
| 72 | atcaacgtgg gcaacatgtat cggaggcatt aacgggcaga gctgtggg ctggccgcac    | 660 |     |
| 73 | tacaaatggg cccggctgtt caagggactg ccccgaggcc gtacccatcac gctgaagctc  | 720 |     |
| 75 | <210> SEQ ID NO: 3  |     |     |
| 76 | <211> LENGTH: 9   |     |     |
| 77 | <212> TYPE: PRT   |     |     |
| 78 | <213> ORGANISM: Human   |     |     |
| 79 | <400> SEQUENCE: 3   |     |     |
| 80 | Lys Leu Leu Gly Gly Gln Ile Gly Leu                                 |     |     |
| 81 | 1 5   |     |     |
| 83 | <210> SEQ ID NO: 4  |     |     |
| 84 | <211> LENGTH: 10  |     |     |
| 85 | <212> TYPE: PRT   |     |     |
| 86 | <213> ORGANISM: HUMAN   |     |     |
| 87 | <400> SEQUENCE: 4   |     |     |
| 88 | Ser Leu Leu Gly Cys Arg His Tyr Glu Val                             |     |     |
| 89 | 1 5 10  |     |     |
| 91 | <210> SEQ ID NO: 5  |     |     |
| 92 | <211> LENGTH: 6263  |     |     |
| 93 | <212> TYPE: DNA   |     |     |
| 94 | <213> ORGANISM: Human   |     |     |
| 95 | <400> SEQUENCE: 5   |     |     |
| 96 | catcaacggg cgggggtgtc gccaacagg ctgctccgca gagcccgccg cgaccccgcg    | 60  |     |
| 97 | ccgcggccgc cccggccctg cctgccatgg gaggccgggg ggccggccct cggccaaacct  | 120 |     |

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/646,569A

DATE: 03/27/2003

TIME: 13:16:44

Input Set : N:\CrF4\03272003\I646569.raw

Output Set: N:\CRF4\03272003\I646569A.raw

|     |   |      |
|-----|---|------|
| 98  | gcccggacatg gggaaaccccg ggcccaggcg tgctggtcac catgacaaca gagacaggcc   | 180  |
| 99  | ccgactctga ggtgaagaaa gctcaggagg aggccccgca gcagcccgag gctgctgccc     | 240  |
| 100 | ctgtgaccac ccctgtgacc cctgcaggcc acggccaccc agaggccaac tccaatgaga     | 300  |
| 101 | agcatccatc ccagcaggac acgcggcctg ctgaacagag cctagacatg gaggagaagg     | 360  |
| 102 | actacagtga ggcgcgtggc ctttcggaga ggaccacgccc cagcaaggcc cagaatcg      | 420  |
| 103 | cccagaagat tgccaagaaa tacaagagtg ccatctgccc ggtcactctg cttgtatgc      | 480  |
| 104 | cgaggtatga gtgtgagggtg gagaacatg gccggggcca ggtcgtgtt gacctggct       | 540  |
| 105 | gtgaacaccc caacccctta gagaaggact acttcggct gacccctgt gatgtgaca        | 600  |
| 106 | gccagaagaa ctggctggac ccctccaagg agatcaagaa gcagatccgg agtagccct      | 660  |
| 107 | ggaatttgc cttcacagtc aagttctacc cgcctgatcc tgcccagctg acagaagaca      | 720  |
| 108 | tcacaagata ctacctgtgc ctgcagctgc gggcagacat catcacggc cggctgccc       | 780  |
| 109 | gctcccttgc cacgcgtgcc ctactggct cctacgctgt gcaggctgag ctgggtgact      | 840  |
| 110 | atgtatgtga ggagcatgtg gcaactatg tcagcgagct cgccttcgcc cctaaccaga      | 900  |
| 111 | cccgggagct ggaggagagg atcatggagc tgcataagac atataggggg atgaccccg      | 960  |
| 112 | gagaaggcaga aatccacttc ttagagaatg ccaagaagct ttccatgtac ggagtagacc    | 1020 |
| 113 | tgcaccatgc caaggactt gagggcattcg acatcatgtt aggccgtttgt gccaatggcc    | 1080 |
| 114 | tgtcatcttcc cccggaccgg ctgagaatca accgccttgc ctggcccaag atccctcaaga   | 1140 |
| 115 | tctcttacaa gaggagtaac ttctatatac agatccggcc tggggagttt gagcaattt      | 1200 |
| 116 | agagcacaat tggcttaag ctcccaaaacc accggtcagc caagagactg tggaaggct      | 1260 |
| 117 | gcacatcgatca tcatacatc ttccggctgg tgccttgc gccccccaccc aagggttcc      | 1320 |
| 118 | tggatggg ctccaagttc cgttacagtg ggaggacca ggcacagact cgcggcc           | 1380 |
| 119 | gcgcctcat tgaccggcct gcacccttct ttgagcttc ttccagcaaa cggtagacca       | 1440 |
| 120 | tgtcccgca gcttgcgttgc gcaaggttct cccgcggc ctcggcgtac gagaaccatg       | 1500 |
| 121 | atgcaggggcc tgacgggtac aagcgggatg aggatggcga gtctgggggg caacgggtac    | 1560 |
| 122 | aggctgagga gggagggc agacttccaa ccaagatcaa ggagctaaag cgggagcagg       | 1620 |
| 123 | aaaccacgccc gagacacaag caggagttt tagacaagcc agaagatgtc ttgtgtaa       | 1680 |
| 124 | accaggccag catcaatgag ctcaaaaaggc ccctgaagga gcccacacgc aaactcatcc    | 1740 |
| 125 | accggatcg agactggaa cgggagcgc ggcgtccctc ctccccggcc tccccctccc        | 1800 |
| 126 | ccaagggcac ccctgagaaa gcaaatgaga gagcagggtt gaggggggc tccgaggaga      | 1860 |
| 127 | aagtcaaaacc accacgtccc cgggccccag agagtacac aggccatgag gaccaggacc     | 1920 |
| 128 | aggagaggga cacgggttgc ctgaaggaca accaccctggc cattgagcgc aagtgttcca    | 1980 |
| 129 | gcacatcgatc cagctctacg tctagcctgg aggctgaggt ggacttcacg gtcattgg      | 2040 |
| 130 | actaccatgg cagcgccttc gaagacttct cccgcggcct gcctgagctc gaccgggaca     | 2100 |
| 131 | aaagcgactc ggacactgag ggcctgtgt tctccggga tctcaacaag gggggccccc       | 2160 |
| 132 | gccaggatga tgagtctggg ggcattgagg acagccggc tcgagggggc tgctccaccc      | 2220 |
| 133 | cggatatgcc ccagtttgc cccgtgaaaa cagaaccat gactgtcagc agtctggcc        | 2280 |
| 134 | ttagaaaagaa gattgagccg gaggccgtac tgcagaccag agtctccgtt atggataaca    | 2340 |
| 135 | cccagcagggt tgcgtgggtt gcttcgttgc ggaggagtt catagcaacc actccctcca     | 2400 |
| 136 | tcaccacgga gaccatatcg accaccatgg agaacatgtt caagtccggg aaggggggc      | 2460 |
| 137 | ctggccatgtatcc cccaggccca cagacgggttgc ccacggaaat ccgttcttt tctccatca | 2520 |
| 138 | tcgggaaaga tgccttcacc agcacccatc ggcggactgc ggaaaccctc tcaacctcca     | 2580 |
| 139 | ccaccaccca tgcacccaa actgtgaaag gagggttttgc tgagacaagg atcgagaagc     | 2640 |
| 140 | gaatcatcat tactggggat gaagatgtcg atcaagacca ggcctggct ttggccatca      | 2700 |
| 141 | aggaggccaa actgcagcat cctgatatgc tggtaaccaa agtctgtgt tacagagaaa      | 2760 |
| 142 | cagacccatc cccagaggag aggacaaaga agccacacca atcctgaccc ctgtgtgg       | 2820 |
| 143 | atcctggcat ttctggcca acccaagcca gagaaccatt aagaaggggc cttcattctg      | 2880 |
| 144 | gattctccga cgcacactg acgtcccgac tgcgacgtac tgcactgtat gagagactgg      | 2940 |
| 145 | gaaggggaaaa gcatatataat atagatataat agagatataat agatataac aggaacacc   | 3000 |
| 146 | gcatccttgc actgtgtgtc gggctggcag agcagggttgc tgacagcaac aaccggacatc   | 3060 |

## RAW SEQUENCE LISTING

DATE: 03/27/2003

PATENT APPLICATION: US/09/646,569A

TIME: 13:16:44

Input Set : N:\CrF4\03272003\I646569.raw

Output Set: N:\CRF4\03272003\I646569A.raw

|     |  |      |
|-----|--|------|
| 147 | tgaacaccta catttccttt gcagacaaat tgaagaactg gtgggatttt tttcaagaaaa   | 3120 |
| 148 | aaaaattata taataactat aatcccttgc tcacccttt ccccccggcaa ataagaaacg    | 3180 |
| 149 | caagccagac cacgatgatt gtagaagtcc ctcccccctt gttctgcac gttacagttt     | 3240 |
| 150 | gcagacgago aattccattt gttcttctcc agcatctcta aggcccactt gaatgcaaag    | 3300 |
| 151 | gaaaacactt gcacagcaaa gcaagagaag tcacagcagc aagacacgca cagtcaacca    | 3360 |
| 152 | tttccgaga aaaaaagaaa attccccact tggaaagaaa gaggaggaac actggattct     | 3420 |
| 153 | tacttctgg atcttgcac tgggtgtcaa aacctacctt cctctctccc gcctccctc       | 3480 |
| 154 | accctcaact ctcaatgtct tgcgtcatt ttctgtctcg gtcctctctt ccccttccc      | 3540 |
| 155 | cctcccccaccc ccccacaccc ttccacccctt gtgtctggg cttctgagg gccactgcag   | 3600 |
| 156 | atgactctcc tttgaaatga gaaaaagaaa agaaagcaag aacagaaaac gaagccacag    | 3660 |
| 157 | gaagggaaagt agacatgtt tgcattat gaaggtgcag cttgttaggag                | 3720 |
| 158 | gttgtacgg atgtgtttt aagttatgtt tattacatat aacaggaaaa aatattaata      | 3780 |
| 159 | aacagtgtt gtaagtatgtt agctgacatt ctaaaattt aattatctgtt ctgtgattgtt   | 3840 |
| 160 | tgtatcctgtt ggttccttgc tctcaactgaa ctggccacg taaggagacc tggactctgg   | 3900 |
| 161 | gtgtgggtt gtcacagta ggggtgtacg ggttcagtgt agtaataactg tttgtgtgtt     | 3960 |
| 162 | ttgttaattgg ttgattggg gggaggggtt gggggcccta atggagaggt gtgggtttgg    | 4020 |
| 163 | caagaaaagaa gcaacacaga tgcgtcccc aaaatgccag ttcaagacac cttctccctt    | 4080 |
| 164 | cccccccttggt agtaacagtc agggcctggt ctgtgtcag gtactgggtc ccagtctgg    | 4140 |
| 165 | actctgtgc tgaagttgcc acagtagagg tccctggctt agtccttatac tccctacggg    | 4200 |
| 166 | gcttccttgc gttttcagtc ttctctctct ttctctcttt ttttttttt tgccacattt     | 4260 |
| 167 | tgccttccc tgccttgcatt gtaataacca actccatatac caaaggagg tgggtctctc    | 4320 |
| 168 | agcattgtt gaaatgggtt gctttaaccc gactgtctaa aaattccca gtaagccctt      | 4380 |
| 169 | tcctctactc ttttccttgc tctgaatcat ttcttctt caggccaaag tagccatgg       | 4440 |
| 170 | aaggaggctt catggggcag accctgaaatg atcaaaactg catttgcaaa gcccctccct   | 4500 |
| 171 | gtcccaggac aaagctgaga ctgacgggtt atgttgcata taggctccag ctctgcataa    | 4560 |
| 172 | gacccctggc tggagacccctt cctctcagtc aacagctgaa ctctgagctt gtgcccagaa  | 4620 |
| 173 | attaccccaa gaccacagga acccttcaag aagctcccat cacaagcttgc gatgtctct    | 4680 |
| 174 | ctgccacacg tggcttccctt caggcttgc tgcacacaacg tacttctctg agctcagaaa   | 4740 |
| 175 | gtcccccttg atgagggaaa atgtccact gcaactgcgaa ttctctcagg ccattttacc    | 4800 |
| 176 | tccctgtcctt cctctctaaac cagttataaa attcattcca caagtattttt ctgattaccc | 4860 |
| 177 | gcttgccttgc gggactattt tcaggctgaa gaagggtggg gggggggggc gaaacctgg    | 4920 |
| 178 | agccacccgtt gccagcttta tatttcaacc atggctggcc catctgagag catctccca    | 4980 |
| 179 | ctctcgccaa cctatcgccccat gatggccccc aggcggccca ggttagatgc            | 5040 |
| 180 | gtccctttgg ctgtcacttgc atgacatatac ccttagctgc ttagctggg ctggcttag    | 5100 |
| 181 | gcagggcagg aaatcagaat agcatttgc tctctggca aatggaaatg tcagggggc       | 5160 |
| 182 | agcagaatca gtggcattcc cctctgtgc ggcgggtgg tccactccaa ctccccctgtt     | 5220 |
| 183 | gtgttagcagc acactttca tacaccagg tctttctaca atcctgtgg aaaagccaca      | 5280 |
| 184 | gaaccttctt cctgccccttgc ttgagagttt ccccttttgc tgggtcaaga gctggagttt  | 5340 |
| 185 | tggctccatc ctctctggc cacttcggc taggaactca tctttcagg aaccaggagt       | 5400 |
| 186 | cctgagcaca ctgaacacac ctcagaggaa gatccctgtt tggatgtttt gcacctggct    | 5460 |
| 187 | ttggggcagg ggtgaatgtt ccaggcttgc tttgtggagt ttatggccaa ccagggtttt    | 5520 |
| 188 | ggggaaatcac catcccggg atgtgtgac ctcccttcta cggagatgc ggcagtgc        | 5580 |
| 189 | cgagggagga ggggacccgtt aaagctgaaatc tcttagggcac ttttctcc ccatcttct   | 5640 |
| 190 | ctttgttagat aatagagacg ttgttcttgc tctgttccaa cctacttttctt cttttctt   | 5700 |
| 191 | ttttgtttctt catcctcttgc tgcacccagg aggccatgtt gcatagtgaa             | 5760 |
| 192 | aaaagtcctt gggggcggtt aggagttctg ggtgaccatc ctggctcagc tcctactca     | 5820 |
| 193 | ccatgtgaca tcaggcttgc cccattcccc ctcttggcc tcaatggccc gacttgcaaa     | 5880 |
| 194 | ataagcagaa agaaccagat gctctccagg gtcttttctt accttgcata ctcatgggtc    | 5940 |
| 195 | ttcattttctt cttatgggtt tttctcttgc tctttccat ctgggggtac aggaagtacc    | 6000 |

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/646,569A

DATE: 03/27/2003  
TIME: 13:16:44

Input Set : N:\Crf4\03272003\I646569.raw  
Output Set: N:\CRF4\03272003\I646569A.raw

|           |                 |             |             |                 |             |             |      |
|-----------|-----------------|-------------|-------------|-----------------|-------------|-------------|------|
| 196       | aggacctgtt      | tcagttttg   | aatcctgcaa  | gcacattcca      | agactggcct  | gaaactgcat  | 6060 |
| 197       | gagcaacatc      | actcgaaata  | atttttttt   | tcaaaaagcac     | cttaacaacc  | aattgcgatg  | 6120 |
| 198       | ctgtcctgtt      | cctttttact  | cacacccttc  | tctcccttct      | cgtccccatg  | ctccccccacc | 6180 |
| 199       | tcagtgtcc       | gtgctgtatg  | cgtgtctct   | ctgttcttgt      | atactcaata  | taagtgaaat  | 6240 |
| 200       | aaatgtgttt      | gatgctgaac  | cat         |                 |             |             | 6263 |
| 202 <210> | SEQ ID NO: 6    |             |             |                 |             |             |      |
| 203 <211> | LENGTH: 933     |             |             |                 |             |             |      |
| 204 <212> | TYPE: PRT       |             |             |                 |             |             |      |
| 205 <213> | ORGANISM: Human |             |             |                 |             |             |      |
| 206 <400> | SEQUENCE: 6     |             |             |                 |             |             |      |
| 207       | Ser Ala Gly     | Gly Gly Val | Ala Glu Gln | Ala Ala Pro     | Gln Ser Pro | Pro Pro     |      |
| 208       | 1               | 5           | 10          | 15              |             |             |      |
| 209       | Arg Pro Arg     | Ala Ala Pro | Pro Arg Gly | Leu Pro Ala     | Arg Gly Ala | Glu         |      |
| 210       | 20              | 25          | 30          |                 |             |             |      |
| 211       | Gly Ala Ala     | Pro Arg Pro | Thr Cys Pro | Thr Trp Gly     | Thr Pro Gly | Pro         |      |
| 212       | 35              | 40          | 45          |                 |             |             |      |
| 213       | Gly Val Leu     | Val Thr Met | Thr Thr Glu | Thr Gly Pro     | Asp Ser Glu | Val         |      |
| 214       | 50              | 55          | 60          |                 |             |             |      |
| 215       | Lys Lys Ala     | Gln Glu Glu | Ala Pro Gln | Gln Pro Glu     | Ala Ala Ala | Ala         |      |
| 216       | 65              | 70          | 75          | 80              |             |             |      |
| 217       | Val Thr Thr     | Pro Val Thr | Pro Ala Gly | His Gly His     | Pro Glu Ala | Asn         |      |
| 218       | 85              | 90          | 95          |                 |             |             |      |
| 219       | Ser Asn Glu     | Lys His Pro | Ser Gln Asp | Thr Arg Pro     | Ala Glu Gln | Ser         |      |
| 220       | 100             | 105         | 110         |                 |             |             |      |
| 221       | Leu Asp Met     | Glu Glu Lys | Asp Tyr Ser | Glu Ala Asp     | Gly Leu Ser | Glu         |      |
| 222       | 115             | 120         | 125         |                 |             |             |      |
| 223       | Arg Thr Thr     | Pro Ser Lys | Ala Gln Lys | Ser Pro Gln     | Lys Ile Ala | Lys         |      |
| 224       | 130             | 135         | 140         |                 |             |             |      |
| 225       | Lys Tyr Lys     | Ser Ala Ile | Cys Arg Val | Thr Leu Leu     | Asp Ala Ser | Glu         |      |
| 226       | 145             | 150         | 155         | 160             |             |             |      |
| 227       | Tyr Glu Cys     | Glu Val Glu | Lys His Gly | Arg Gly Gln     | Val Leu Phe | Asp         |      |
| 228       | 165             | 170         | 175         |                 |             |             |      |
| 229       | Leu Val Cys     | Glu His Leu | Asn Leu Leu | Glu Lys Asp     | Tyr Phe Gly | Leu         |      |
| 230       | 180             | 185         | 190         |                 |             |             |      |
| 231       | Thr Phe Cys     | Asp Ala Asp | Ser Gln Lys | Asn Trp Leu Asp | Pro Ser Lys |             |      |
| 232       | 195             | 200         | 205         |                 |             |             |      |
| 233       | Glu Ile Lys     | Lys Gln Ile | Arg Ser Ser | Pro Trp Asn     | Phe Ala Phe | Thr         |      |
| 234       | 210             | 215         | 220         |                 |             |             |      |
| 235       | Val Lys Phe     | Tyr Pro Pro | Asp Pro Ala | Gln Leu Thr     | Glu Asp Ile | Thr         |      |
| 236       | 225             | 230         | 235         | 240             |             |             |      |
| 237       | Arg Tyr Tyr     | Leu Cys Leu | Gln Leu Arg | Ala Asp Ile     | Ile Thr Gly | Arg         |      |
| 238       | 245             | 250         | 255         |                 |             |             |      |
| 239       | Leu Pro Cys     | Ser Phe Val | Thr His Ala | Leu Leu Gly     | Ser Tyr Ala | Val         |      |
| 240       | 260             | 265         | 270         |                 |             |             |      |
| 241       | Gln Ala Glu     | Leu Gly Asp | Tyr Asp Ala | Glu Glu His     | Val Gly Asn | Tyr         |      |
| 242       | 275             | 280         | 285         |                 |             |             |      |
| 243       | Val Ser Glu     | Leu Arg Phe | Ala Pro Asn | Gln Thr Arg     | Glu Leu Glu | Glu         |      |
| 244       | 290             | 295         | 300         |                 |             |             |      |
| 245       | Arg Ile Met     | Glu Leu His | Lys Thr Tyr | Arg Gly Met     | Thr Pro Gly | Glu         |      |

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 03/27/2003  
PATENT APPLICATION: US/09/646,569A TIME: 13:16:45

Input Set : N:\CrF4\03272003\I646569.raw  
Output Set: N:\CRF4\03272003\I646569A.raw

**Please Note:**

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:15; N Pos. 23,42,48,1105

Seq# :17; N Pos. 23,42

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/09/646,569A

DATE: 03/27/2003

TIME: 13:16:45

Input Set : N:\Crf4\03272003\I646569.raw

Output Set: N:\CRF4\03272003\I646569A.raw

L:885 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15 after pos.:0

M:341 Repeated in SeqNo=15

L:953 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 after pos.:0